# SERIALDIS
# Serial ASCII Display Module

*User Manual*

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**Contents**


**SERIALDIS Overview ..... 2**
**Overview ..... 2**
Requirements ..... 2
Configuration ..... 2
**Operation ..... 2**
**Physical Connections ..... 2**
Single PC Connection ..... 2
Multidrop RS232 ..... 3
Multidrop RS485 ..... 3
**Configuration ..... 4**
**Error Reporting ..... 4**
**Control Codes ..... 4**
**Addressing ..... 5**
**Display Examples ..... 5**
**Character Representations ..... 6**
**Specification ..... 7**
**Environmental ..... 7**
**CE Approvals ..... 7**
**Warranty ..... 7**

## *SERIALDIS Overview*

The SERIALDIS is a 6 digit LED display module which displays ASCII data sent to it via an RS232 or RS485 serial connection.
The device has addressing support so multiple devices can be driven whilst residing on a serial bus.
Being a 7 segment display it is not possible to display all alphanumeric characters so this display is primarily for numeric data.

## *Overview*

### *Requirements*

The module requires a serial input, either RS232 or RS485, which supplies the data to display followed by a carriage return.
The baudrate is selectable from 9600 to 115200 but is fixed at 8 data bits, 1 stop bit and no parity.

### *Configuration*

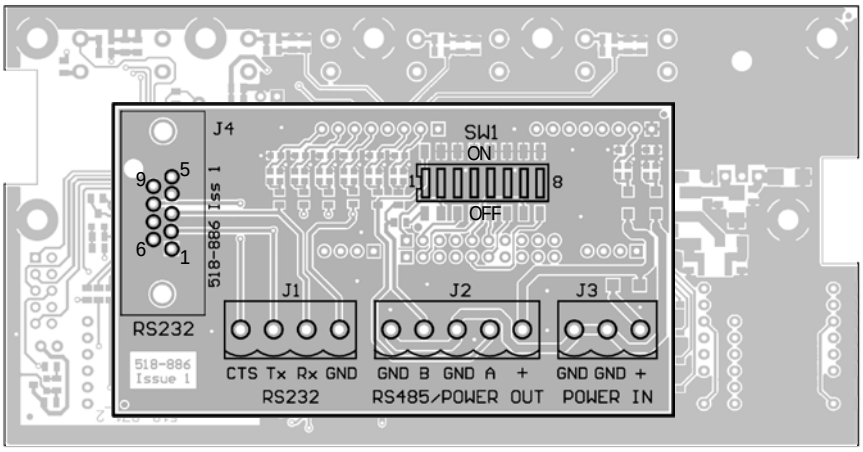
Configuration is by DIP switches where the baudrate and address can be set.

## *Operation*

The display accepts ASCII data and on receipt of a carriage return character (decimal 13, hexadecimal 0D) the data will be displayed.

## *Physical Connections*

### *Single PC Connection*




View from inside case.

Connect power to The 'Power In' connector.

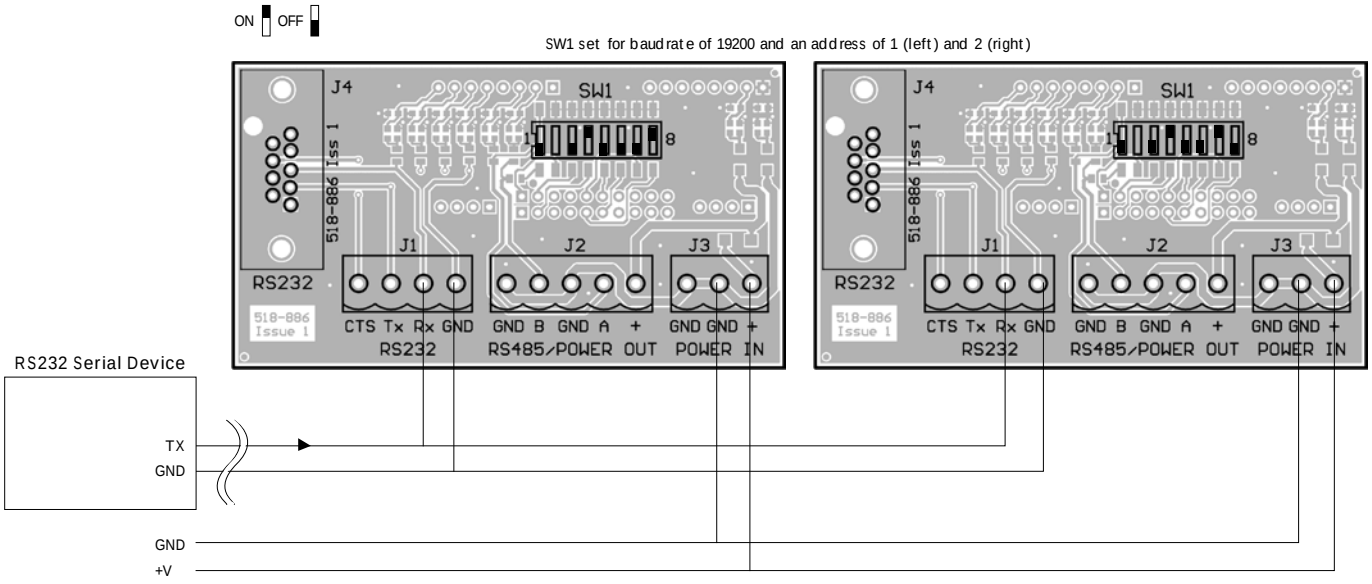
Connect to the serial bus using either J1 or J4 for RS232 or J2 for RS485.

9 Way 'D' Socket RS232 Pinouts

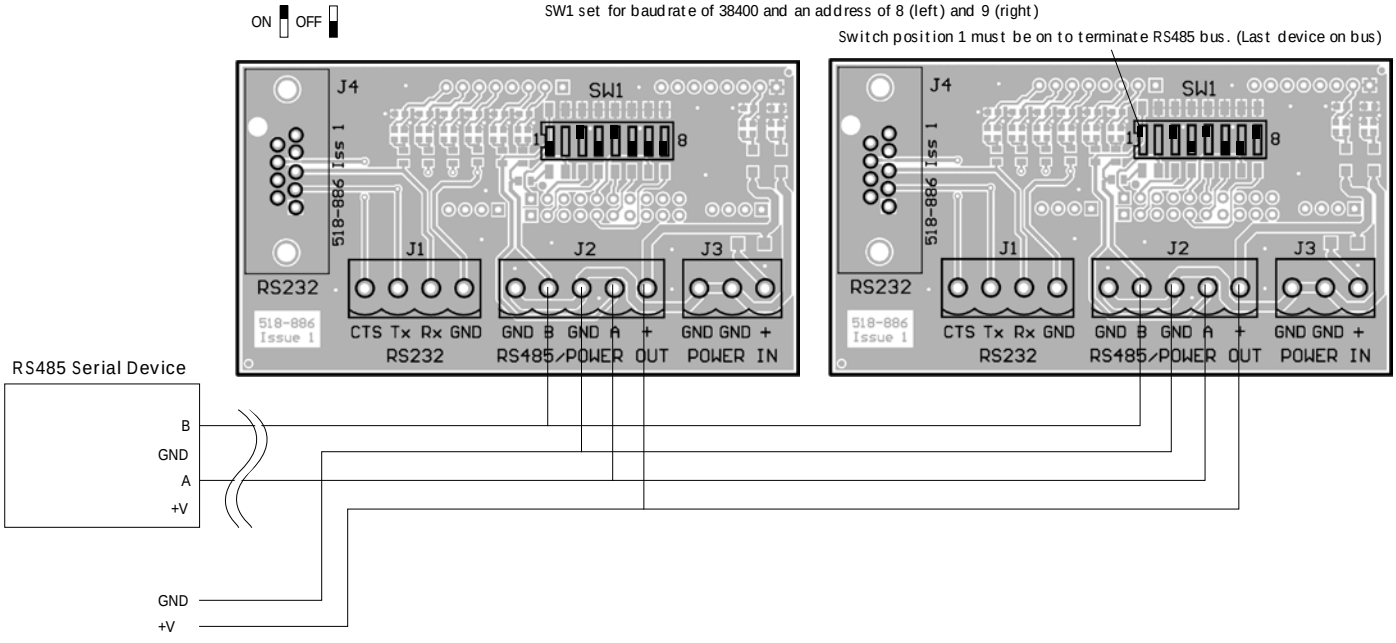
| | |
|---|---|
| **3** | **RX (In)** |
| **5** | **GND** |

J4 has been designed to enable a quick connection to a PC for testing by using a 9 way D cable extension (pin to pin) and connecting to the PC 9 way D socket.

## *Multidrop RS232*




## *Multidrop RS485*



## *Configuration*

RS485 Terminating resistor, baudrate and address can be selected by DIP switch SW1. The numbers at the top of each table refer to the individual switches in SW1.

**RS485 Terminator Resistor**

On an RS485 bus the first and last modules on the bus should be terminated with a 120R resistor.

| **1** | |
|---|---|
| Off | No Terminating Resistor |
| On | 120R Terminating Resistor Applied |

**Baudrate**

Set the baudrate to match the data that will drive the display.

| **3** | **4** | |
|---|---|---|
| Off | Off | 9600 |
| Off | On | 19200 |
| On | Off | 38400 |
| On | On | 115200 |

**Address**

Set the address of the display. To disable addressing set to all Off.

| **5** | **6** | **7** | **8** | |
|---|---|---|---|---|
| Off | Off | Off | Off | 0 |
| Off | Off | Off | On | 1 |
| Off | Off | On | Off | 2 |
| Off | Off | On | On | 3 |
| Off | On | Off | Off | 4 |
| Off | On | Off | On | 5 |
| Off | On | On | Off | 6 |
| Off | On | On | On | 7 |
| On | Off | Off | Off | 8 |
| On | Off | Off | On | 9 |
| On | Off | On | Off | 10 |
| On | Off | On | On | 11 |
| On | On | Off | Off | 12 |
| On | On | Off | On | 13 |
| On | On | On | Off | 14 |
| On | On | On | On | 15 |

**NOTE: DIP switch changes require a power cycle to implement.**

## *Error Reporting*

If no serial data arrives for within 10 seconds (default) the display will show NoData. As soon as new data arrives this will be displayed instead.

## *Control Codes*

Embedding control codes in the ASCII data can control certain functions of the display.

| Control Byte | Value Byte | Function |
|---|---|---|
| 0x01 | Address | The value byte contains the address of the display device to send the data to. |
| 0x02 | Timeout | The value byte contains the new timeout period in seconds. This can be between 0 and 30. The default is 10. |
| 0x03 | LEDs | The value byte contains value whose binary bit values indicate whether to turn on or off the row of 4 LEDs. A value of 1 would light the rightmost LED. A value of 8 would light the left most LED. A value of 3 would light the two right hand LEDs. |
| 0x04 | Flash | The value byte indicates whether to flash the display. A value of 1 will cause the display to flash and a value of zero will stop it flashing. |

## *Addressing*

Up to 15 display modules can be uniquely addressed on an RS232 or RS485 bus. To address a particular module send the special control character 0x01 followed by a byte indicating the address.
i.e. To send data to display module addressed as 7 the following would be sent:

`[0x01][0x07]123.456[0x0D]`

Where the square brackets indicate a single byte whose value is shown in hexadecimal.

If data is sent with no addressing control bytes then all displays will show the data.
If a module is addressed as zero via SW1 then it will display all data.

## *Display Examples*

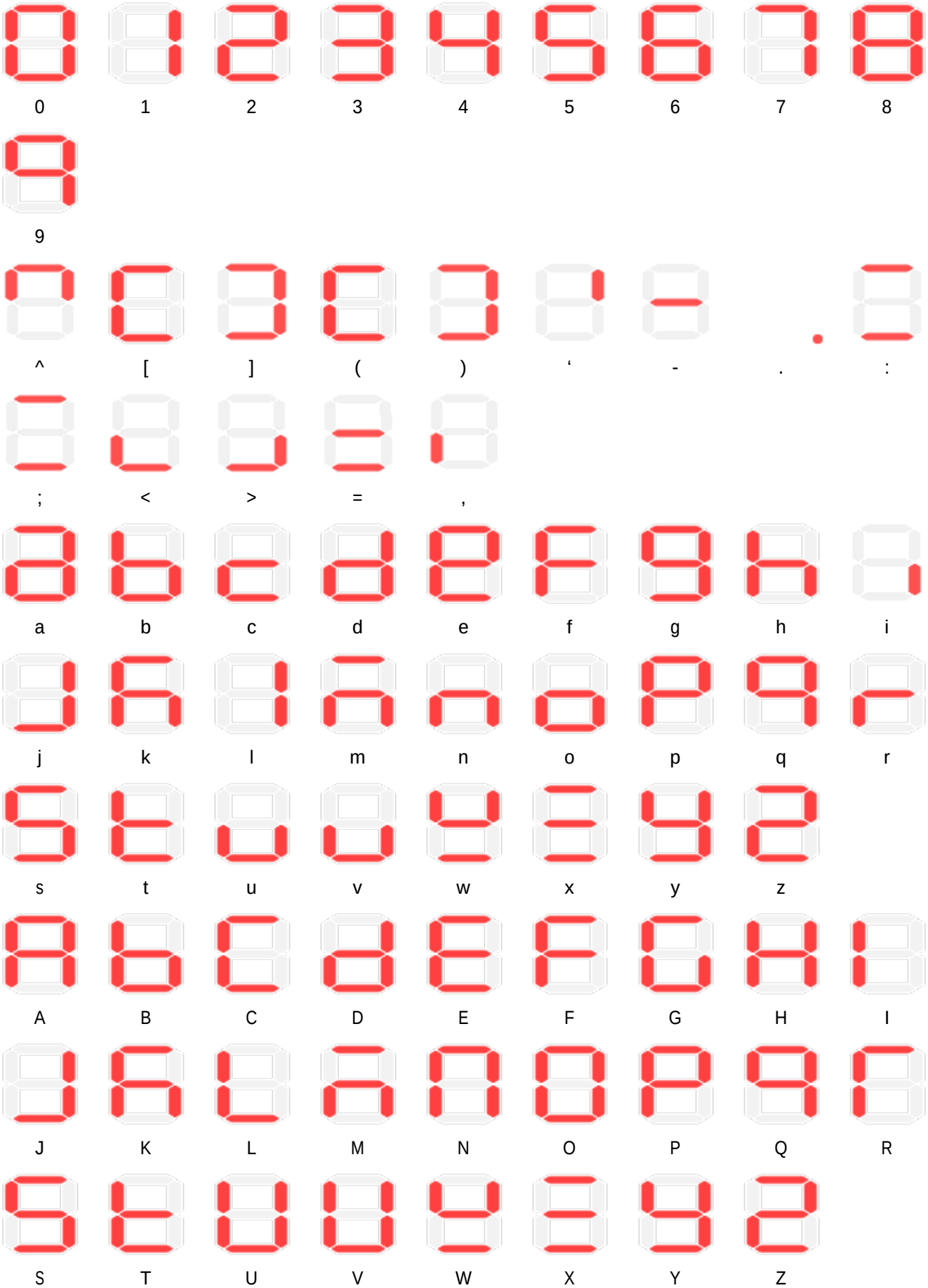
Each piece of data sent to the display must end in a carriage return (decimal 13, hexadecimal 0x0D). For clarity the carriage returns are not shown in the following table.
The following examples show the resulting display for data received:

| | |
|---|---|
| `123.4` | 123.4 |
| `-123.456` | -123.456 |
| `-00123.4` | -00123.4 |
| `Hello` | HELLO |

**WARNING: if more data is sent than will fit in the 6 digit display the right most portion will be shown. Take care when sending numeric data that it is not too long otherwise integer digits will be lost.**

| | |
|---|---|
| `-123.4567` | 23.4567 |
| `1234.56789` | 4.56789 |

## *Character Representations*



## *Specification*

| | |
|---|---|
| **Supply Voltage:** | |
| Nominal Voltage | 8 to 18V dc |
| **Current Consumption:** | |
| Max | 200mA |
| **Communications:** | |
| RS232 and RS485 | 8 data bits, 1 stop bit, no parity. |

## *Environmental*

| | |
|---|---|
| Storage temperature | - 20 to +70ºC |
| Operating temperature | -10 to 50ºC |
| Relative humidity | 95% maximum non condensing |

## *CE Approvals*

| | |
|---|---|
| European EMC Directive | 2004/108/EC<br>BS EN 61326-1:2006<br>BS EN 61326-2-3:2006 |

## *Warranty*

All Wireless Telemetry products from Mantracourt Electronics Ltd., ('Mantracourt') are warranted against defective material and workmanship for a period of (1) one year from the date of dispatch.
If the 'Mantracourt' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact your Distributor, who will assist you in resolving the problem. If it is necessary to return the product to 'Mantracourt' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair.
The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit.

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Any corrective maintenance required after the warranty period should be performed by 'Mantracourt' approved personnel only.

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In the interests of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice.


| | | |
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